APPROVED:

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RMRS Quality Assurance

POND SLUDGE QUALITY ASSURANCE PROJECT PLAN (QAPjP)

QUALITY ASSURANCE CRITERIA per 10CFR830.120

QA criteria listed in this project plan are the required elements to comply with DOE quality requirements as defined in 10CFR830.120. The application and implementation of these criteria into items and services shall be consistent with the graded approach. The graded approach is a "process of basing the level of application of managerial controls applied to an item or work according to the intended use of the results and the degree of confidence needed in the quality of the results" (E-4, ANSI/ASQC, 1994). The graded approach is also a function of safety (risk) and security required accomplishing program objectives (10 CFR 830.3).

In practical terms, the graded approach requires selective application of QA requirements and control to items and services commensurate with their importance to safety and project objectives. The USEPA states that "Environmental data operations encompass diverse and complex activities, and they represent efforts pertaining to rulemaking, compliance with regulations, and research. Consequently, any plan that is developed to represent how QA/QC should be applied to environmental activities must contain considerable flexibility (EPA, 1994a). The content and level of detail in this QA Project Plan is tailored to the nature of the work and associated risk with the Pond Sludge Project. Hazardous and radiological risks, including catastrophic bounding conditions, have been thoroughly characterized for this project through the Integrated Work Control Program, the ALARA Job Review (RF/RMRS-98-208), and the Nuclear Safety Technical Report (RF/RMRS-98-215).

POND SLUDGE QUALITY ASSURANCE PROJECT PLAN (QAPjP)

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1.0 POND SLUDGE PROJECT OVERVIEW

The objective of this project is to remove an estimated 2400 cubic meters of low-level mixed pond sludge currently stored in eighty-two (82) 10,000 gallon polyethylene tanks located on the 750 Pad in tents 3, 4, and 6. The pond sludge will be pumped from the tanks, de-watered, mixed with absorbents, packaged in waste containers, receive final analysis, and shipped to an approved disposal site. The current schedule calls for the shipment of 150 cubic meters of sludge before June 30, 1999, and the balance to be shipped before the end of FY00.

2.0 MANAGEMENT

2.1 Program

The Pond Sludge quality program implements requirements set forth in 10CFR830.120, which are "flowed down" through the RFETS-specific quality documents of Kaiser-Hill (K-H Team Quality Assurance Program, 12/15/97) and RMRS (RMRS-QAPD-001, Quality Assurance Program Description). Key personnel and organizations for project management are given in Appendix 1. The organization chart illustrates the infrastructure, functional responsibilities, levels of authority, and organizational interfaces necessary to accomplish the project goals and RMRS contractual commitments.

The Pond Sludge Project QA Implementation Matrix, Appendix 2 provides a general perspective of the documents establishing the management structure in place for the Pond Sludge Project. Specific document and record control numbers may be obtained through review of the Pond Sludge Project Files and/or the RMRS Records Center.

2.2 Personnel Training and Qualification

Personnel shall be qualified to perform their respective tasks based on a combination of education, training, and experience. Education and professional experience shall constitute the primary means of qualification for activities that emphasize problem-solving strategies, where creativity and innovation are essential components of optimizing the activity or item. Conversely, training shall be the primary means of qualification where:

- consistency and team coordination constitutes a major component of the overall quality (or safety) of the process or item, and
- the process is well established, proven, and perfunctory.

Training requirements specific to the Pond Sludge Project are given in the Pond Sludge Project -specific list of qualified individuals (LOQI). In addition, a project-specific QA briefing will be given prior to project start-up in the field, and to new personnel prior to their participation on the project. The QA briefing will cover the requirements stated in this QA Project Plan and will be documented via the pre-evolution or attendance roster. QA personnel are qualified and certified per RMRS-QA-02.01, "RMRS Qualification and Certification of Quality Assurance Personnel".

Fundamental education and experience are captured by transcripts and resumes, which are maintained by RMRS Human Resources or the subcontractor, as applicable. Site-specific and project-specific training records are managed within the K-H TSR (Training, Scheduling, and Records) database. Qualification requirements and records may also be maintained through the project manager, individual staff, procurement (within contractual agreements), and/or a centralized training group within RMRS or the IMC (K-H). The Pond Sludge Project QA Implementation Matrix, Appendix 2 tabulates the documents and records that establish (i.e., plan and implement) T&Q within Pond Sludge Project.

2.3 Quality Improvement

Quality improvement shall be realized through use of a systematic means of identifying, tracking, and correcting problems (deficiencies, non-conformances, issues, etc.). Problems may be identified by any project personnel, at any time, through formal documentation of issues as stated in RMRS-QA-03.01, "Corrective Action". Management by walk-around, management assessments and independent assessments will also be used to identify, track, and correct issues (Sections 4.1 and 4.2). The extent of causal analysis and corrective action shall be commensurate with the significance of the failure or problem. "Lessons Learned" shall be communicated to staff from management where appropriate.

2.4 Documents and Records

Work-controlling documents, such as work plans, Integrated Work Control Packages (IWCP), standard operating procedures, etc., shall be controlled, where "control" is constituted by the following criteria:

- the documents are uniquely identified for reference purposes;
- the required reviews and approvals are accomplished; and,
- the personnel, who need the documents to perform work, receive the latest approved versions of the document(s).

The document control process is described in RMRS procedure DC-06.01, "Document Control Program". Essential policies, plans, procedures, decisions, data, and transactions of the project will be documented to an appropriate level of detail. The objective shall be to maximize the utility of records and data for accomplishment of performance objectives while minimizing the cost of information management and paperwork for the project (RMRS) and its subcontractors. The documents controlling this project are summarized in Appendix 2.

All documents that constitute contractual deliverables (from RMRS to the client), such as work plans or final reports, shall undergo a minimum of three reviews, internally within RMRS, to ensure that minimum quality requirements are met:

- a management review (level of management higher than originating author(s));
- a technical/round table/peer review (as determined by management); and,
- a quality assurance review.

Quality records, including digital data stored on computerized media, shall be managed to ensure that information is retained, retrievable, and legible. Active records will be maintained by project personnel including RMRS subcontractors, in an organized and retrievable fashion, until such time that the records have served their purpose and become inactive. Quality records are considered active until the final peer reviews are conducted, thus, quality records are not subject to the 30-day limit on turnover to the RMRS Records Center until final peer reviews are conducted. Peer reviews of records must be conducted on records completed by the originator within two (2) weeks of completion. Records at the job-site shall be stored and protected in fire-safe boxes.

Quality records managed by subcontractors will be acquired by RMRS through the standard processes of procurement and subcontracting. Only inactive records will be sent and maintained in record storage facilities. Records turnover and archival are controlled through RM-06.02, "Records Identification, Generation, and Transmittal".

Quality records resulting from direct measurements or technical sampling activities shall be authenticated by the originator and subsequently authenticated by a peer reviewer ("QC checked"). For data uploaded to computer from the quality records described above, final data entry (as portrayed on hardcopy output) must be reviewed by someone other than the data entry person and the hardcopy must be authenticated by the reviewer. Errors on quality records shall be corrected by striking through the original entry with a line and incorporation of the correct data adjacent to the strikeout. Authentication is also required for corrections.

Kaiser-Hill Analytical Services is responsible for all original records produced concerning lab-generated chemistry and radiochemistry data; the Pond Sludge project will use data as provided by K-H Analytical Services or their subcontractors.

3.0 PERFORMANCE

3.1 Work Processes

Workforce

Management shall hire and maintain a workforce capable of performing the project objectives. Establishment and maintenance of the workforce for this project shall be within budgetary constraints as defined by the IMC (K-H).

Individual workers are responsible for the quality of their work. Management shall provide the workforce with the tools, materials, and resources (including training) necessary for successful accomplishment of their assigned tasks. Performance criteria for personnel shall be established and clearly communicated to the individuals.

Material Resources

Materials and equipment that affect quality (of items or services) or health and safety shall be controlled, i.e., identified, maintained, and traceable according to its intended purpose. Measurement, monitoring, and data collection equipment shall be of the accuracy and resolution needed for their intended purposes based on calibrations. Calibrations shall be traceable to nationally recognized or industry standards. Essential policies, plans, procedures, decisions, data, and transactions of the project will be documented to an appropriate level of detail.

3.2 Design

General

Sound engineering/scientific principles and appropriate technical standards shall be incorporated into designs to ensure that they perform as intended, including use of the RFETS Conduct of Engineering Manual.

Final design, work control documents, quality records, or computer data, shall undergo review. Reviews shall be commensurate with the scale, cost, specialty, and hazards of the item or activity in question. Project management approval, in addition to peer and quality reviews of designs, shall be effected prior to procurement, manufacture, construction, or field implementation. Peer and quality reviews are corroborated through documented comment resolution of the design reviews.

Data Acquisition and Sampling

The Data Quality Objective (DQO) process (*EPA, 1994; QA/G-4*) has been adopted for all data collection activities for this project. Both the EPA and the DOE Office of Environmental Management have established the DQO process as policy (EPA QA/R-5 and DOE, 1994, respectively) for determining the types, quality, and quantity of data needed for environmental and waste management decision-making, while optimizing time and cost considerations.

Although the process is not explicitly laid-out in the seven steps for each data collecting activity, all data acquisition and sampling activities are associated with action levels for quantitative comparisons and subsequent decisions that allow error, or uncertainty, to be quantified. In particular, sampling and analysis for determining environmental and waste management decisions are captured in the RMRS Sampling and Analysis Plan for Pond Sludge Material, RF/RMRS-98-291.

Computerized Systems (Software/Hardware)

If computerized systems are utilized, design-control of computerized systems shall be commensurate with the hazards associated with the process for which the computer system controls. Systems controlling critical health and safety processes shall be verified and validated as prescribed in either the Pond Sludge Job Hazard Analysis or the Radiological Operating Instructions, and must simulate working conditions prior to usage in real settings. Such systems shall also be tested periodically to ensure functionality as defined in the RFETS Radiation Control Manual or the Pond Sludge IWCP.

Computerized systems used for data reduction and analysis shall be controlled to:

- ensure traceability of changes made to original data, and
- allow independent peer review to relate inputs to outputs.

3.3 Procurement

Quality requirements shall be delineated in procurement and subcontract documents. All contracts (subcontracts) let by RMRS shall be reviewed for QA requirements to ensure that adequate quality controls are established and implemented by the subcontractor. Suppliers or vendors shall be established and used according to the Procurement Levels defined in the Level 1 site procedure 1-W36-APR-111, "Acquisition Procedure for Requisitioning Commodities and Services".

3.4 Inspection and Acceptance Testing

Items or activities that require inspections and/or acceptance testing will be specified in work-controlling documentation (e.g., work plans, standard operating procedures, data management plans, etc.). Acceptance criteria and any hold points shall be clearly defined, and will be based on manufacturer's specification unless otherwise stated. Measurement and test equipment (M&TE) will be accepted or rejected based on calibration information and pre-established tolerances, including unique identification, traceability, accuracy, resolution, measurement ranges, and acceptance/rejection criteria. Calibration standards shall be traceable to nationally recognized or industry standards.

4.0 ASSESSMENTS

4.1 Management Assessment

At least quarterly during the fielding of the project, project management shall evaluate the organization to determine the effectiveness of the Quality Assurance Plan and overall RMRS organization performance (Appendix 3). Management assessments shall be documented through annual reports, periodic status reports, internal memoranda, or other suitable reporting means, and are performed according to RMRS-QA-09.01, "Management Assessments".

4.2 Independent Assessment

Personnel who are not directly responsible for the work being performed shall perform independent assessments. Independent assessments are performed according to RMRS-QA-10.02, RMRS Conduct of Surveillances and RMRS-QA-10.01, Independent Assessments.

Independent assessments shall:

- be based on the RMRS QA Plan, and other controlling documents as necessary;
- evaluate the performance of work beyond the mere review of documents and records (i.e., relative to technical specifications and project-specific data quality objectives and associated management decisions);
- act as management advisory functions; and,
- view the organization being assessed as the "customer" of the assessment results, and strive to produce useful feedback on RMRS assets and liabilities with respect to the RMRS mission and performance objectives.

A schedule of RMRS assessments planned for the project is given in Appendix 4.

5.0 REFERENCES

10CFR830.120, Quality Assurance

10 CFR 830.3

ANSI/ASQC E4-1994. *American National Standard, Specifications and Guidelines for Quality Systems for Environmental Data Collection and Environmental Technology Programs.*

DOE, 1994. T.P. Grumbly Memorandum to Distribution, *Institutionalizing the Data Quality Objectives Process for EM's Environmental Data Collection Activities*, September 7, 1994.

DOE, August 1991. DOE Order 5700.6C

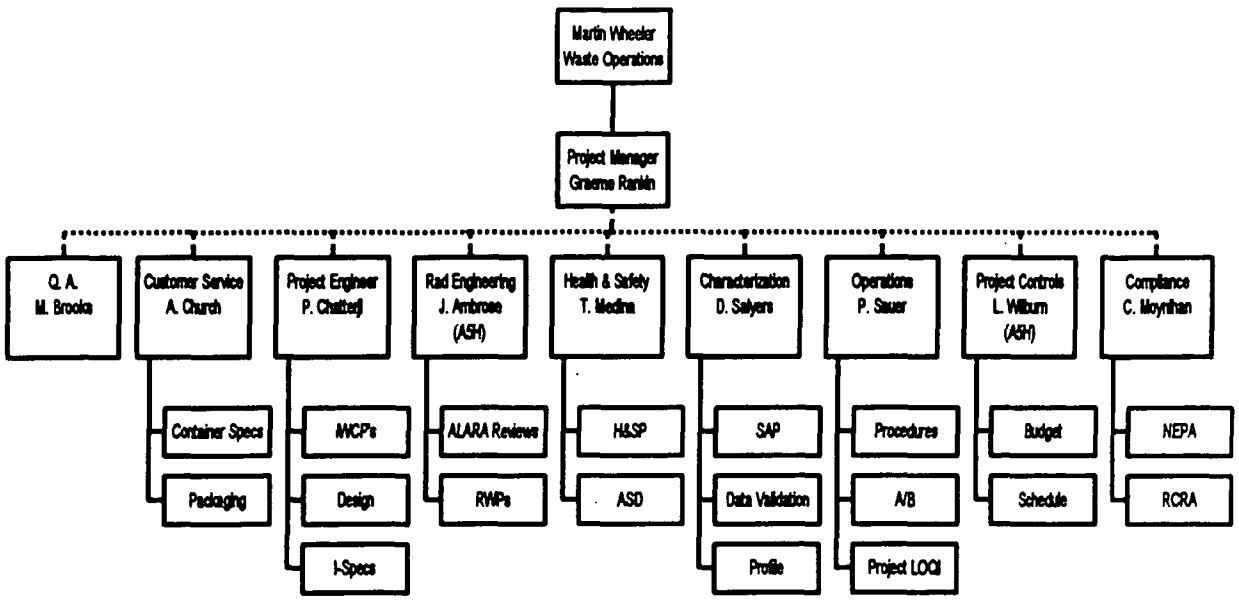
EPA, 1997. EPA Requirements for Quality Assurance Project Plans, QA/R-5

EPA, 1994. Guidance for the data quality objectives process, EPA QA/G-4

EPA, 1998. Guidance for the data quality assessment process, EPA QA/G-9

APPENDIX 1

ORGANIZATIONAL CHART
for the POND SLUDGE PROJECT



APPENDIX 2

QA IMPLEMENTATIO MATRIX
for the POND SLUDGE PROJECT

Quality Requirements	Proof of Implementation
Management *Program*	• RMRS Quality Assurance Program Description, RMRS-QAPD-001 • Statement of Work
Training/Qualification	• Job Hazard Analysis • List of Specific Qualified Individuals • RMRS Qualification and Certification of Quality Assurance Personnel, RMRS-QA-02.01 • RMRS Human Resource • Statement of Work/Contracts • Readiness Review • Training, Schedule, & Records (TSR) Database
Quality Improvement	• RMRS Corrective Action, RMRS-QA-03.01 • RFETS Plant Action Tracking System (PATS) • RMRS Conduct of Surveillance, RMRS-QA-10.02
Documents	• RMRS Document Control Program, DC-06.01 • Statement of Work • Pond Sludge QAPjP
Records	• RMRS Records Identification, Generation, and Transmittal, RM-06.02 • Sampling & Analysis Plan Records • K-H Analytical Services (analytical/rad results) • Integrated Work Control Packages (IWCP) Records • Health and Safety Records • Radiological Records • Waste Management Records • Conduct of Operations Logs
Performance *Work Processes*	• Statement of Work • Integrated Work Control Packages (IWCP) • Operations Orders • K-H Radiological Control Manual • Radiological Operating Instructions • Conduct of Operations Manual

APPENDIX 2 (continued)

QA IMPLEMENTATION MATRIX
for the POND SLUDGE PROJECT

Quality Requirements	Proof of Implementation
Performance (continued) *Work Processes*	• RMRS Sampling Analysis Plans • Radiological Work Permits • Operating Procedures and Instructions • Waste Generator Instructions
Design	• Authorization Basis Document • Integrated Work Control Program • RMRS Sampling Analysis Plan • Radiological Work Permits • Air Monitoring Plan • Job Hazard Analysis
Procurement	• RFETS Acquisition Procedure for Requisitioning Commodities and Services, 1-W36-APR-111 • Statement of Work • RFETS Evaluated Suppliers List
Inspection and Acceptance Test	• Calibration/maintenance records for M&TE
Assessments *Management Assessments*	• RMRS Management Assessments, RMRS-QA-09.01 • Management Assessment Schedule
Independent Assessments	• RMRS Conduct of Surveillance, RMRS-QA-10.02 • RMRS QA Surveillance Schedule • Independent Assessments, RMRS-QA-10.01

APPENDIX 3

PROJECT MANAGEMENT ASSESSMENT SCHEDULE
for the POND SLUDGE PROJECT

Project Management Assessment Topic	Assessment Period
• Safety Management	February 1999 to March 1999
• Procurement	April 1999
• Radiological Control	June 1999
• Compliance	August 1999

APPENDIX 4

QA SURVEILLANCE SCHEDULE for the POND SLUDGE PROJECT

Surveillance Topic	Surveillance Period
• Integrated Work Control	April 1999 to July 1999
• Training/Qualification	July 1999 to August 1999
• Operating Procedures/Records	August 1999 to September 1999